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CONTRIBUTIONS OF THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

No. 1: OUTLINE OF THE HISTORY AND DEVELOPMENT OF THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

By MADELEINE A. FRITZ

NINETEEN HUNDRED AND THIRTY-NINE

W. A. Parks, B.A., Ph.D., F.R.S., Director, Royal Ontario Museum of Palaeontology, 1913-1936

THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

By MADELEINE A. FRITZ, Assistant Director

Early Growth of the Palaeontological Museum
(1871-1904)

IN seeking the beginnings of the Royal Ontario Museum of Palaeontology one must go back as far as the year 1871 when Professor Henry Alleyne Nicholson occupied the chair of Natural History at the University of Toronto. Professor Nicholson, who was an eminent palaeontologist of his day and who had come to Toronto from Edinburgh, became intensely interested in the palaeontology of Ontario. During his brief sojourn in Canada he acquired sufficient data through his explorations and investigations for the preparation of a valuable report published in 1873 entitled the *Palaeontology of the Province of Ontario.* In the course of his researches in this connection Professor Nicholson made extensive collections of fossils. In a preface to his report he states, "in addition to the collection which I have placed in the Museum of the University, I have also placed examples of the more typical Devonian fossils in the Museum of the College of Technology." This note appears to be the first published reference to the existence of a palaeontological collection in the Museum. It is an unfortunate circumstance that these early fossil collections were destroyed during the fire that ravaged University College in 1890. Fortunately, however, the splendid example set by Professor Nicholson in the assembling of material for a museum was followed by his successors. It may be truly said, therefore, that the seeds for a palaeontological museum in Toronto were sown by this far-seeing Scottish pioneer. Among Nicholson's fossils destroyed by the fire were many specimens used by him in the description of new species. It is interesting to record here that even yet after a period of sixty-five years the Museum is still receiving from students in palaeontology enquiries regarding the whereabouts of the Nicholson types. Many would like to borrow them, were they available, for comparison with similar specimens from other places.

Thus it will be seen that the Museum of Palaeontology, which at the present time is so closely associated with the University, is in reality an outgrowth from the early Natural History Department of that great institution.

Professor Ramsay Wright who succeeded Nicholson took a keen interest in developing a teaching museum not only for biology, the subject in which he was most interested, but also for other branches of natural history including palaeontology. It was partly due to his lively interest that palaeontology was represented in the Museum collections that were restored after the fire of 1890. These collections were placed in the new Biology building which was opened in 1892.

Turning to the Department of Geology we find Professor E. J. Chapman as head of the department from 1853 to 1895. Professor Chapman was not greatly interested in palaeontology. Apparently he gathered around him only a small collection of fossils—only those which he found useful for demonstrating in his lectures the main groups of fossil organisms. He will always be remembered, however, among palaeontologists as the discoverer of *Ogygites canadensis*, a trilobite now regarded as the type fossil of the Collingwood formation. It was during the latter part of Professor Chapman's term of office in the year 1893 that William Arthur Parks, who, as we shall see later, became one of the outstanding promoters of the museum movement, received a junior appointment on the staff of the geological department. Professor Chapman having neither a real liking nor an aptitude for the study of palaeontology left this phase of the work largely to his young assistant, who soon showed a distinct inclination to pursue the subject. After the retirement of Professor Chapman, Professor A. P. Coleman, formerly of Victoria University and later of the School of Practical Science, became head of the geological department. By this time W. A. Parks was well established in the department. As in the case of Professor Chapman so Professor Coleman left in the hands of this man, his chief assistant, all matters pertaining to fossils. Dr. Parks was thoroughly imbued with the importance of the creation of a museum in the Province of Ontario and, from the time of his initial appointment until the time of his death forty-three years later, worked assiduously for the establishment of the Museum and for its growth and development. It was largely due to his foresight and his untiring efforts that the palaeontological collections forming the nucleus of the future Museum were assembled.

During the decade following the fire, which had destroyed the earlier collections, the prevailing financial situation was poor and, as a result, departmental development was hampered. Such conditions were not propitious for the creation of a museum that would adequately fulfil the needs of the important subject of palaeontology, the handmaiden of geology. With the beginning of the twentieth century, however, a period of reconstruction began and the museum spirit, which had been dormant for awhile was revived by the more liberal treatment it received. At this time the University and the Museum were very fortunate in having as a friend Mr. Byron E. Walker (later Sir Edmund), well known for his keen interest in science, in art and in all things cultural. Mr. Walker was not only a stimulating force but a generous benefactor.

Museum Collections Located in the Chemistry and Mining Building

(1904-1914)

From the year 1892 up to the turn of the century we find the Geological Museum collections housed in the Biology building. When in 1901 the Government decided to erect the Chemistry and Mining building on College Street, the plans provided space for a Museum of Geology with its various branches. This Museum was to be located in a proposed north-east wing. Funds, however, were not immediately forthcoming for this wing and the scheme had to be abandoned for other temporary quarters in the same building, which became available in 1904. The room set aside for the collections was in the south-east corner of the ground floor of the building. This was the site of the Museum for nearly ten years. During the period in which the Museum was thus located, plans to erect the originally proposed north-east wing were eventually drawn up. Most of the interested parties, however, now considered it wiser to forgo this more or less limited accommodation in favour of a Museum building on broader lines which, it was thought, might ultimately be erected and which would embrace other related departments.

Reference has already been made to the interest shown by Mr. B. E. Walker in the young museum movement. A tangible example of his generosity in these early days was the gift of his valuable collection of fossils in 1904. The palaeontological specimens presented by Mr. Walker comprised an excellent series of Swabian and British ammonites; rare fossils from Chile; a large number of Carboniferous forms from the United States; and an extensive set of Cenozoic fossils from England, France and elsewhere. In addition there were numerous early fish remains from New Brunswick, and an excellent series of graptolites from the

Ordovician rocks at Point Levis. Mr. Walker's generosity was not limited to the presentation of the material above described. In addition, he donated to the Museum the whole of his collection of Palaeozoic fossils numbering many thousands of forms. Particular interest attaches to these fossils in that they are largely Canadian, and from the fact that many cannot be duplicated. Among the series included in the above, certain sets are worthy of special mention, either by reason of their completeness, or because they have served as types in descriptions by Springer, Schuchert and other well-known palaeontologists of that time. Some of the more important of these fossils included: a splendid, accurately labelled collection of Bryozoa from the Middle Ordovician to the top of the Devonian; a very complete set of Sponges not only representing Mr. Walker's own work but that of his father who was also an enthusiastic collector and specialist in fossils; a large collection of Stromatoporoids; many beautiful Echinoderms from the Carboniferous of Ohio as well as a very complete set from the Silurian and Devonian of Ontario; and some unusually well-preserved Trilobites from the Middle Cambrian of British Columbia.

It is apparent from this description that as early as 1904 or 1905 a splendid collection of the fossils of the world was being assembled with Canadian forms represented more completely. About 5,000 species were included in the collection at this time comprising probably two or three times that number of specimens. These specimens were arranged systematically, labelled and catalogued. Upon the acquisition of a specimen, its name, and other information concerning it, were recorded in a register without any attempt at classification. Each specimen acquired a distinctive number which was marked upon it in an inconspicuous place. For each species two catalogue cards were then prepared, and these cards were arranged in two series—one on a purely geological basis, and the other according to the major zoological subdivisions. This system having proved very efficient has been retained, with certain modifications, to the present time.

Scarcely less valuable than the collection of fossils presented by Mr. Walker was the munificent gift of his large and extremely valuable collection of palaeontological publications, undoubtedly one of the best in Canada. These books form a very important part of the Palaeontological Library as it is known to-day and include some exceedingly rare volumes among which may be noted: a complete set of the publications of the Geological Survey of Canada; a complete set of the reports of the New York State

Museum of Natural History; the reports of Geological Suveys of twenty-five states of the American Union; the complete reports of the Palaeontographical Society of Great Britain; a complete set of the publications of the Cincinnati Society of Natural History; Union Pacific Railway Reports; the Palaeontological parts of Special Surveys of the United States, e.g., the Palaeontology of the Upper Missouri, the Mexican Boundary Survey, the Survey West of the 100th Meridian, the Exploration of the 40th Parallel; the fugitive papers of Billings, bound separately; the complete works of Dr. Spencer; a rare volume of Devonian fossils by Hall; palaeontological works of Quenstedt (*Petrefaktenkunde Deutschlands*, *Die Ammoniten des Swabischen Jura*, *Der Jura*); *Palaeospongiologie*, by Rauff; *Die Silurische Fauna des Westlichen Tennessee*, by Roemer (1860); *Petrefacta Germaniae*, by Goldfuss (1826-1833).

In the same year the palaeontological collections were greatly enhanced by the very generous gift from Mr. Wm. Mackenzie (afterwards Sir Wm. Mackenzie) of the George F. Matthew collection of Cambrian fossils from the Maritime Provinces. The value of this contribution cannot be over-estimated. Dr. Matthew, a life-long resident of Saint John, New Brunswick, though not a trained palaeontologist, was a born naturalist. Dr. Matthew became interested early in his career in the rocks and fossils of his native city. He soon extended his researches to other parts of New Brunswick and Nova Scotia and eventually assembled one of the finest collections of Cambrian fossils on the continent. Matthew's efforts were attended with such success that the greater part of our knowledge of the obscure Cambrian fauna of Eastern Canada may be attributed to him. It was this collection, in part, with its rare type specimens incapable of duplication, that Toronto's growing Museum acquired through the generosity of Mr. Mackenzie. Some of these specimens are not merely types but represent the sole example of the species ever discovered. During the past few years many requests have been received from American palaeontologists wishing to borrow or obtain photographs or casts of certain of these unique Cambrian fossils. Such specimens as these give to a museum a value among scientific institutions not otherwise to be obtained.

Another fortunate occurrence at this time which greatly contributed to the further advancement of the Museum was the engagement of Mr. Joseph Townsend as collector for the department. Mr. Townsend, a resident of Durham County, Ontario, was by trade a printer. He willingly gave up the latter occupation, however, when an opportunity was afforded him of collecting fossils, a hobby in which he had long indulged. It might truly be said of Mr. Townsend that he left "no stone unturned" in his search for fossils—only the further weathering of the rocks would serve to reveal specimens in localities over which he had passed! In connection with this work he formed a close friendship with Sir Edmund Walker and together they were able to effect exchanges of fossils that ultimately proved very advantageous to the Museum. From 1900, therefore, we see Dr. Parks directing the palaeontological work generously supported and encouraged by Sir Edmund Walker, later his close friend and adviser, the two being ably assisted by the enthusiastic field worker, Mr. Townsend.

The splendid collections that rapidly accumulated through the fervent efforts of these ardent gentlemen soon outgrew their home in the Chemistry and Mining building which they had occupied since 1905 and an urgent need arose for the long dreamed-of Museum building.

Royal Ontario Museum of Palaeontology in the Original Wing
(1914-1932)

The Government did not take any definite action regarding the Museum until 1912 in which year the Royal Ontario Museum was authorized by an Act of Parliament. In virtue of this authority the Board of Trustees established the ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY at a meeting held on April 3, 1913. Dr. W. A. Parks, whose name will always be firmly linked with the development of palaeontology at the University of Toronto, in the Province of Ontario, and throughout Canada, was named its first Director. It was almost a year later in March, 1914, that H.R.H. the Duke of Connaught opened the original wing of the long hoped-for Museum.

Palaeontology, one of the five component parts of the Royal Ontario Museum, occupied, in this initial building, the middle third of the upper gallery. The necessary storage and preparation rooms for invertebrates and vertebrates were situated in the basement. The offices were located in a small annex at the south end of the wing.

At the time the palaeontological collections were transferred to their new home, the invertebrate collection had grown considerably; they then numbered about 15,000 species represented by about four times that number of specimens. This material illustrated, in a broad way, the whole field of invertebrate palaeontology. The fossils were arranged stratigraphically in a series of oak table-cases separated into alcoves by much higher oak-bound cases at intervals of twenty feet. Each alcove represented fossils belonging to a special biological group. These high cases provided not only for the separation into alcoves, but also for the display of larger and more spectacular specimens. Accompanying the latter were carefully prepared descriptive labels, labels designed as nearly as possible to meet the demands of the public without losing their scientific value. It has always been the policy of this Museum from these early days to the present time to pay special heed to the labelling of all specimens so that visitors might obtain a clear and concise account of the material exhibited. In the front of each of the biological alcoves, previously referred to, was placed a specially designed bronze-bound case to illustrate the anatomy of the class of fossils displayed in the alcove.

Though as indicated the whole range of invertebrate palaeontology was to a certain degree covered, a few groups of fossils were particularly outstanding. Among these might be noted: the type Cambrian fossils of the Matthew collection which included chiefly brachiopods and trilobites; the Silurian (Niagaran) and Devonian corals and the Trenton Echinoderms collected by Townsend; the Cystids, Crinoids and Sponges of the Walker collection; the Interglacial and Post-glacial fossils collected by Professor Coleman.

One of the most outstanding gifts to the Museum at this time, which greatly increased the wealth of palaeontological material, was the extensive and valuable collection of miscellaneous fossils belonging to Victoria College. This material was acquired in the year 1911.

At this stage (up to 1914) in the growth of the Museum little consideration had been given to vertebrate palaeontology. Lack of the space necessary to exhibit large specimens, together with the expense attending their acquisition and mounting, naturally retarded the early development of this phase of the work. It is interesting to note in this connection that it was Dr. B. A. Bensley who was the pioneer collector in vertebrate palaeontology at the University. As early as 1908 he made the first collections of fossil vertebrates from Cretaceous rocks in Alberta. The material he obtained was of a more or less fragmentary character and compared with the splendid collections which have since been made, this material was relatively unimportant. It was, however, Dr. Bensley's early initiative in this work that encouraged others to continue the search for Alberta's hidden treasure of extinct reptilian remains. Included among the specimens collected by Dr. Bensley at this early date were the following: two nearly complete turtle carapaces belonging to the species *Aspideretes cf. planus* and *Aspideretes cf. subquadratus;* part of skull and odd bones of the aquatic reptile, *Champsosaurus cf. inflatus;* isolated bones of trachodont dinosaurs including the femur, portion of the head, ilium, ischium, maxilla, metatarsals, fibula, cervical vertebrae and scapula.

The first large vertebrate specimen was contributed to the Museum while it was still housed in the Mining building. This was a skeleton of the water reptile *Platecarpus coryphaeus* from the Kansas Chalk. It was purchased from Mr. Charles Sternberg in 1910 through the generosity of the following gentlemen: Sir Edmund Walker, Sir Henry Pellatt, the Hon. L. Melvin Jones, D. D. Mann, J. McKinnon, F. B. Robins, H. L. Kerr, R. A. Smith, W. Miller Lash and W. J. Blair.

It was not until four years later after Dr. Bensley's trip to Alberta that the University of Toronto sent a field party into Western Canada to prospect for fossil vertebrates. Alexander MacLean of the geological department of the University was in charge of this rather limited expedition. He brought back a large collection of dinosaur bones from near Munson, on the Red Deer River, Alberta, but no skeleton nor head was acquired at that time.

In addition to this material there was exhibited among the vertebrates in the new wing at the time it was opened, a fair collection of fish and a few specimens representing skeletal parts of bisons and the woolly mammoth. A large part of the skeleton of a mastodon from Welland County had been acquired in 1912 but funds were not available for its immediate mounting.

The period from 1914 to 1932, during which time the collections were housed in the original wing of the Museum, was one of great expansion particularly in vertebrate palaeontology which we have seen had hitherto of necessity been neglected.

Dr. Parks, who had long been aware of the vast dinosaur-bearing beds in Alberta, longed for the time when financial assistance could be obtained whereby regular expeditions might be sent to the Red Deer River to recover for the Museum specimens of these much desired, extinct reptiles. Eventually this ideal was realized for in 1918 was begun a series of expeditions which were carried on annually for fourteen years. The expenses for these field parties were met at first by a special grant from the Government to the Department of Geology, later by grants for "Research in Palaeontology." These expeditions were all to the Red Deer River with the exception of that of 1925, when the party visited

Saskatchewan, and those of 1928 and 1929 which were to South Dakota, Wyoming and Nebraska.

The first expedition in the summer of 1918 was led by Dr. Parks who had as his assistant Mr. Robert Wilson. As a result of their summer's work they brought back with them an almost complete skeleton of the duck-billed dinosaur *Kritosaurus incurvimanus*, the first of its kind to be in the possession of a Canadian institution. When in the spring of 1920 this specimen was prepared for exhibition and mounted in the Museum, an impressive ceremony took place in the palaeontological gallery at which this strange creature, over 50,000,000 years old, was introduced to the citizens of Toronto.

On the following expedition in 1919 Dr. Parks took along with him as assistant Mr. Levi Sternberg who, except for a brief period of time during the years 1923 to 1924, has remained ever since with the Museum as its chief vertebrate preparator. Mr. Sternberg, coming as he did from a family trained and skilled in the collection and preparation of vertebrate fossils, has done much to place the Museum's collections among the foremost of their kind in the world. As a result of this second trip one of the most spectacular (though not most unique) specimens was secured, *Corythosaurus intermedius*, the hooded duck-billed dinosaur that now stands as an open mount at the entrance to the reptile gallery.

The expeditions from 1920 to 1931, with the exception of those in 1923 and 1924, were in charge of Mr. Sternberg. That of 1920 produced one of the most unique dinosaur specimens known to vertebrate palaeontologists. It was named by Dr. Parks *Parasaurolophus walkeri*, the specific name in honour of the Museum's great benefactor, Sir Edmund Walker.

Each year new and interesting skeletons were recovered. The rapid acquisition of these large specimens necessitated further assistance. Accordingly in the fall of 1921 Mr. G. E. Lindblad, who already had considerable experience in this type of work, joined the staff and led the expeditions of 1923 and 1924. In 1922 and 1923 Messrs. R. R. Hornell and John Rickett were engaged. The four vertebrate preparators noted in the foregoing constitute the present working staff.

At the end of the period under discussion (1914-1932) there were placed in the gallery ten complete skeletons and from fifteen to twenty partial skeletons and heads, about half of which represent the original types of the species concerned. Among the most outstanding of these specimens are: *Parasaurolophus walkeri* known only by one other fragmentary specimen found later in

New Mexico by Mr. Charles Sternberg (this specimen is now in Upsala Museum in Sweden); and *Struthiomimus currellii*, a bird-like dinosaur of which this Museum possesses the only two heads in existence.

In addition to the dinosaurs which, as indicated, constituted at this time the most important feature of the fossil vertebrates, crocodiles, turtles and various types of sea-reptiles of the Mesozoic era were illustrated by typical examples. Besides the reptiles there were represented several splendid mammal mounts conspicuous among which were: the complete skeleton of the Irish deer, the almost complete skeleton of the American mastodon and a group of three rhinoceroses from Nebraska. The rhinoceroses were obtained by the University expeditions of 1928 and 1929. These expeditions to the famous Tertiary mammal-bearing beds of Nebraska, South Dakota and Wyoming furnished considerable material of unusual scientific value. Among this material might be noted, in addition to that which has already been mentioned, numerous oreodont skeletons and the head of a titanothere. Reverting to the reptiles, an unusually fine collection of turtles ranging in size from two inches to two feet in length was also obtained from these same beds.

With regard to the fossil fish, an earnest endeavour was made from the beginning to assemble material that would be effective in demonstrating the growth and development of this important class of vertebrates. Among the most primitive of the fossil fish in the collection is an example of *Cyathaspis acadica* collected by Dr. G. F. Matthew from the Silurian of New Brunswick.

The early Devonian fish were well represented by many very fine specimens not only from the old Red Sandstone of Scotland, but also from various localities in North America including the famous Escaumenac beds along the shores of Baie de Chaleur.

Though remains from practically every geological period were represented, a collection purchased from Mr. George Sternberg in 1931 from the Eocene of Wyoming is outstanding from the point of view of the excellent preservation of the specimens.

Birds constituted then, as now, a very minor element in the Museum collection. Fossil birds are among the rarest vertebrate specimens owing to the many difficulties involved in their preservation and subsequent fossilization. The skeleton of a *Moa* of Quaternary age, purchased in 1913, was the only significant example of a fossil bird in the collection up to the year 1932.

Though the period from 1914 to 1932 might well be referred to as the period of vertebrate expansion, the invertebrate collections were by no means neglected. By the close of this period from 15,000 to 20,000 species had been assembled to portray the progress of invertebrate life upon the globe from the earliest time to the present.

In addition to the vertebrate and invertebrate fossils, the collections contained a good series of Carboniferous plants from Eastern Canada and from other well-known coal-bearing localities in the United States and throughout the world. Outstanding among the coal plants was a very fine collection of beautifully preserved fern fronds from Minto, New Brunswick, presented in 1923 by Dr. W. S. Dyer. Besides this material there were several large silicified tree stumps from the Cretaceous. These specimens, belonging to an extinct cypress, were obtained by Professor Alexander MacLean during his expedition to Alberta in 1912. They were found in association with the dinosaur bones collected by Professor MacLean to which reference has previously been made.

Fifteen years later in 1927, while prospecting for dinosaurs in Alberta, Mr. Levi Sternberg secured an exceedingly fine silicified tree trunk, another variety of extinct cypress. This specimen measured over fifteen feet in length.

A splendid collection of Tertiary leaves from Spitzbergen presented by Dr. A. P. Coleman in 1910 greatly enhanced the assemblage of palaeobotanical specimens. Likewise, the rare Glacial, Interglacial and Postglacial plant material gathered by Dr. Coleman during the course of his Pleistocene investigations in the vicinity of Toronto, most of which was presented in 1913, added considerable prestige to the collections.

A highly prized collection of opalized wood of Miocene age from the Virgin Valley Opal Field in Nevada was purchased in 1932. This beautiful and colourful material demonstrates in a most vivid manner a particular type of fossilization in which the structure of the woody tissue is exquisitely preserved by being replaced molecule for molecule by silica.

Besides these specimens many other examples of fossil plants were accumulated, illustrating, in a general way, the character of the plant life upon the globe from the early Ordovician period to the present. During this period these specimens were either on display or in storage in the invertebrate section.

Present Location in the New Wing

(1932-1939)

With the collections steadily increasing it became apparent, as the years went by, that if the growth of the Museum was to be maintained, a larger building would soon be necessary. This urgent need was felt alike in all five Museums. Within fifteen years, therefore, after the opening of the original wing an earnest and energetic appeal was being made to enlarge the building. In due time the appeal bore fruit and in 1930 greatly extended additions and renovations were begun on the old wing. As a result of this work the Museum building as we now know it became a reality. It was officially opened in October of 1933.

In the new east wing the Museum of Palaeontology occupies the whole of the second floor which, in the main, is divided into four galleries for exhibition purposes. In addition, at the south end of the building, are located the offices of the director of invertebrate palaeontology, the secretary, museum assistant and cataloguer as well as storage and work-rooms of invertebrate palaeontology and the Library. At the north end are located the offices of the director of vertebrate palaeontology and chief preparator, work-rooms and a dark room for photography. In the basement the Museum of Palaeontology has two large rooms for vertebrate storage and preparation as well as a room for invertebrate storage. Facilities are also afforded in a room, shared by two other component Museums, for the cutting, polishing and sectioning of palaeontological specimens.

With reference to the Library mentioned in the foregoing a word of explanation seems fitting at this point in the narrative.

In a museum of palaeontology of any size and importance it is essential that there should be accessible a library with all the available palaeontological publications. If the work of continued cataloguing, of identification of new specimens and of the description of new species is to be efficiently carried on, the museum must have at hand all publications bearing upon the subject.

The Board of Governors of the University of Toronto recognized this situation when it was brought to their attention by Dr. Parks. In 1915, therefore, the Board of Governors authorized the establishment of a Palaeontological Library to be housed in the Royal Ontario Museum. In this connection the following letter was written by the Bursar of the University of Toronto to Sir Edmund Walker on November 12, 1915.

> At a meeting of the Board of Governors held yesterday, I presented your letter of the 3rd instant regarding the collection of books concerning Palaeontology which has been created from your handsome gifts from time to time. The Board assented to your two proposals—
>
> (1) The establishment of a Palaeontological Library in distinction to a library on general Geology.
>
> (2) The placing of such a library in the Royal Ontario Museum.
>
> With regard to the latter the Board wish it kept on record that the ownership of the library or the control thereof does not pass to the Museum.

This Library, now housed in the Royal Ontario Museum of Palaeontology, contains the large collection already noted as having been presented by Sir Edmund Walker; Canadian and foreign reports presented by societies and surveys; pamphlets on historical geology and palaeontology presented by Professor A. P. Coleman; individual donations; and a relatively small number of pamphlets and books obtained by purchase.

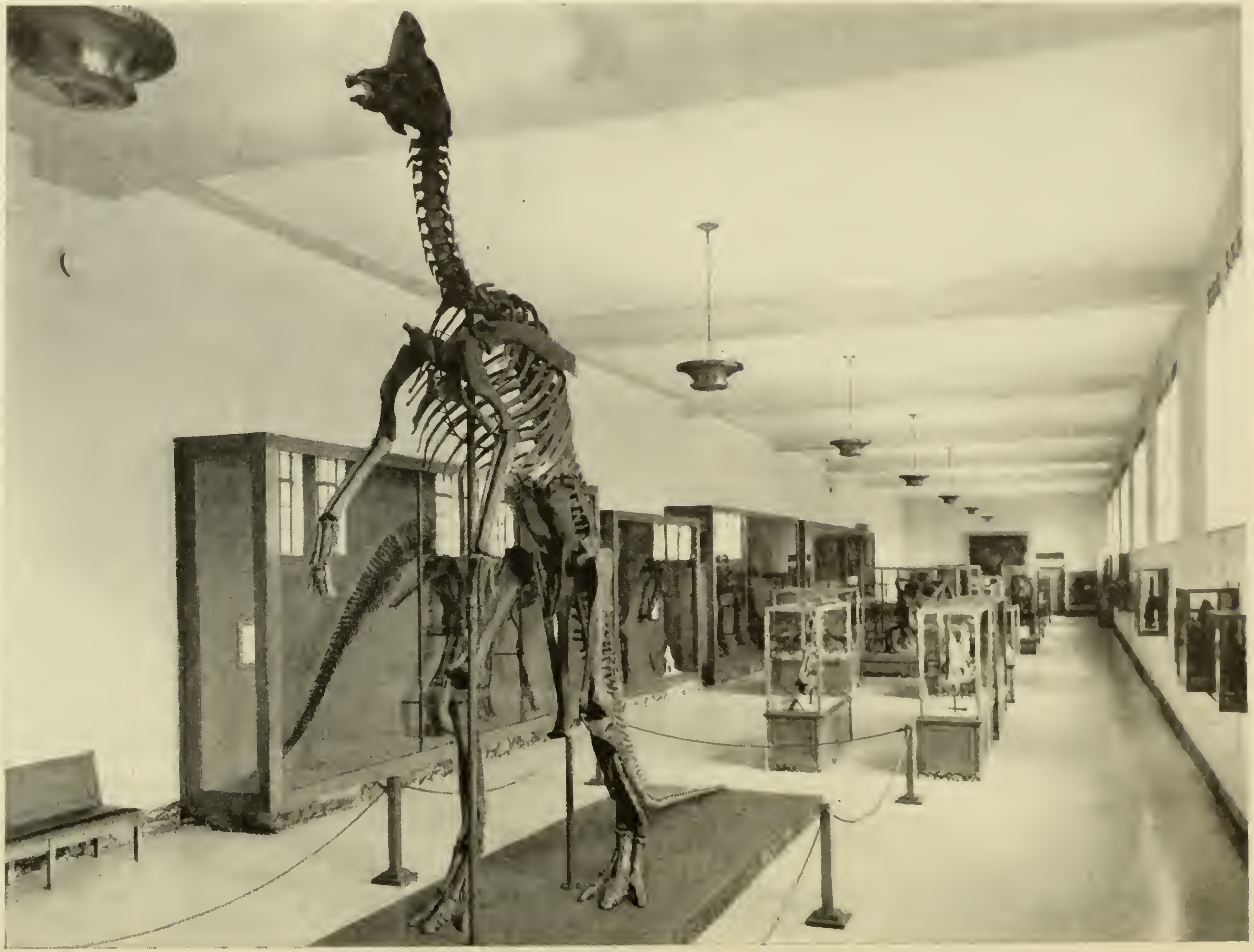
The Library was in the outset intended for palaeontology and stratigraphy but as many books contain articles on other subjects and as many pamphlets and reports not dealing directly with palaeontology have been received, it has grown far beyond its original purpose.

An accession register is kept in which each book or pamphlet is entered and given a number. At the present date, March 15, 1939, the register shows 18,298 entries. This register has been kept by Miss Elvira Hammell who has held the position of chief cataloguer in the Museum of Palaeontology almost since its beginning. An account of the Museum would be incomplete without a reference to Miss Hammell's valued work.

As previously noted the exhibition space in the Museum is divided into four galleries. Of these the north-east gallery is devoted to fossil reptiles. Though this gallery contains some typical specimens from the United States and Europe, its chief interest lies in the large collection of dinosaurs from Western Canada to which reference has been made earlier in this historical review.

This collection was considerably augmented by the expeditions to Alberta in 1933, 1934 and 1935. These expeditions yielded a number of very fine specimens including a large carnivorous dinosaur, several duck-billed dinosaur heads and the skeleton of a new horned dinosaur.

The north-west gallery contains all the vertebrate fossils other than the reptiles. The fish collection, as already indicated, is representative of the development within this biological group, though it is not large. The only important recent additions to the



North-east Gallery Vertebrate Palaeontology collection were secured by the Museum expedition to Quebec and New Brunswick in the summer of 1938. This expedition was under the leadership of Dr. L. S. Russell. The specimens obtained comprise examples of some of the most primitive and earliest known fishes and are, therefore, valuable from the evolutionary standpoint.

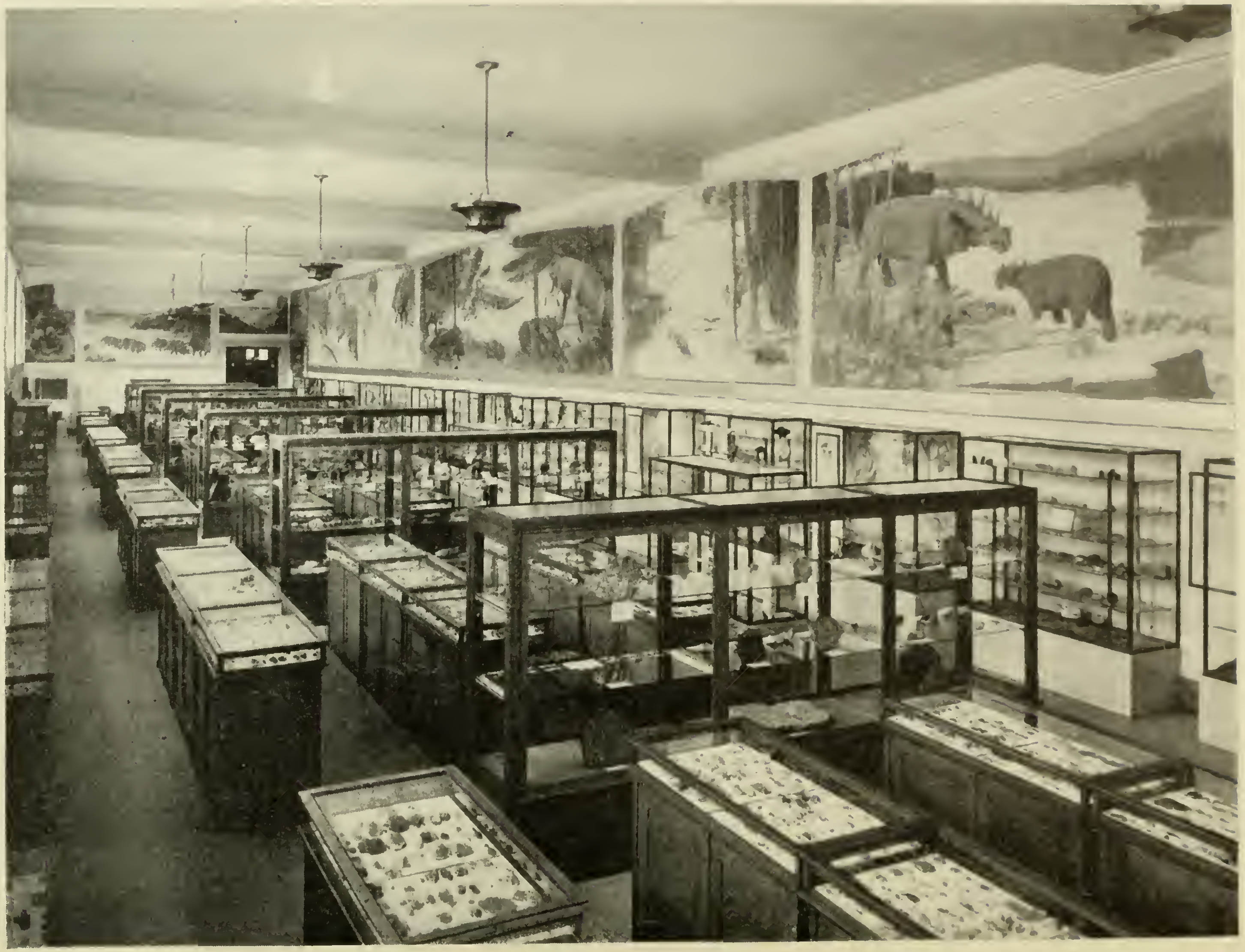
Among the mammals several excellent mounts have recently been installed in the gallery. They include the skeletons of two extinct horses—*Plesippus shoshonensis* from the Pliocene of Idaho, and *Equus occidentalis* from the Pleistocene of California; also, part of the skeleton of *Glyptodon reticulatus*, an armadillo-like animal from Argentina. Probably the most outstanding recent achievement of the vertebrate preparators, under the able direction of Mr. Sternberg, is the arrangement of a group of fossil mammals from the Pleistocene asphaltic deposits of Los Angeles. Into these skeletons they have put life and action that is almost inconceivable.

Though, as already noted, the bird material is meagre, the collection has been greatly enhanced recently by the acquisition of the skeleton of a *Dodo*. Special mention is made of this specimen in view of the fact that skeletons of this extinct bird are exceedingly rare and since they are no longer procurable in the place where they originally occurred. It is, therefore, an outstanding addition to the collection.

The invertebrate specimens are exhibited in the south-east and south-west galleries, the method of display being practically the same as that outlined for the old wing. The major basis of the arrangement is zoological. Each phylum is shown in a separate alcove, and within each alcove the material is arranged chronologically in table cases. Beneath the tables are storage cupboards for additional material. Each alcove also contains a special case with material to illustrate the morphology and the biological classification of the particular phylum represented. One alcove is reserved for specimens illustrating methods and types of fossilization, and another for fossil plants.

In addition to the material displayed in the alcoves, a set of cases is designed to show typical Canadian fossils from the earliest Cambrian formations to the Pleistocene. These cases are arranged continuously along the west wall of the east gallery. Storage cupboards beneath these cases provide for additional Canadian fossil material.

The invertebrate collections are constantly increasing. They contain at the present time more than 20,000 individual species



South-west Gallery Invertebrate Palaeontology that are represented by several times that number of specimens. Of special interest among the recent invertebrate acquisitions is a small, miscellaneous collection of fossils from the Ontario Provincial Museum which was presented in 1934. Accompanying this material was a series of palaeontological books and reports from the Library of the Ontario Provincial Museum.

A particularly valuable collection purchased in 1938 from Mr. J. E. Narraway has greatly enriched the Museum. Mr. Narraway, an amateur collector of Ottawa, acquired this material over a period of years (from 1904 to 1918). The collection, which consists of hundreds of specimens, contains many echinoderms and trilobites. Among the latter groups there are over twenty type specimens which are particularly valuable. These type specimens have been used in the description of new species by several eminent palaeontologists including Schuchert of Yale and Raymond of Harvard.

As previously indicated the fossil plant collection, though not particularly representative of the plant life throughout the ages, illustrates, in a general way, the successive floral types from the earliest times to the present. In 1935 Professor J. W. Russell, of the University of Western Ontario, presented the Museum with a very unusual specimen which he had found in the upper Devonian shales at Kettle Point on Lake Huron. This plant, *Callixylon* sp., represents an ancestral pine-like tree that lived at this very ancient period. The presentation of this fossil plant was greatly appreciated since it represents one of the earliest land plants in the collection.

Recent Policy with Respect to the Exhibition of Specimens

Up to the time the Museum was moved to its new home in the present building the palaeontological material was exhibited in a strictly scientific manner. With the accommodation greatly extended in the beautiful new wing and with a growing demand on the part of the public to know more about the beginnings of life upon the globe, more consideration has been given to a popular interpretation of the subject.

The first attempt to popularize the work was made in 1934 when a series of high bronze-bound cases, containing material from nine successive geological periods, were arranged along the east wall of the south-west gallery. This material, demonstrating in a general way the development of life upon the globe, is exhibited and labelled in such a way that it may be readily understood by the layman. Alternating with these exhibits are other cases containing life-size wax models of marine fossils, chiefly shellfish, as well as oil paintings designed to represent landscapes of six geological periods.

The interest shown by the public in fossils as a result of this more vivid method of illustrating a subject hitherto regarded as very dull, has encouraged further work of this nature. In collaboration, therefore, with Mr. G. A. Reid, the eminent Canadian artist, the Museum planned an extensive series of paintings typifying successive periods of geological time. As a result of these plans thirty-five large murals were completed and installed in the galleries of invertebrate palaeontology in 1938. In these paintings Mr. Reid has combined the knowledge of the scientist with the vision of an artist to place on canvas, in a striking manner, the history of the world from its misty beginnings to the more or less well-ordered world as we know it today. The cost of this colossal work, as well as that of the earlier series of paintings, was provided for by a grant from the Reuben Wells Leonard Bequest to the Museum.

Since there seems to be an ever-increasing demand from the public for special lectures and demonstrations dealing with the subject of palaeontology, it has become more and more apparent that concentration on popular methods is essential, always bearing in mind, however, that scientific accuracy must not be overlooked or sacrificed.

Concluding Remarks

During the course of this brief outline the history of the Museum of Palaeontology has been traced from the early days, when little more than the Museum idea existed, through periods of struggle on the part of those who, with far-seeing eye, realized the great advantages, both scientific and cultural, that would accrue from a strong provincial Museum. The development has been traced up to the time when the Royal Ontario Museum of Palaeontology was actually established and the long hoped-for and much dreamed-of Museum building became a reality. Finally, its progress has been followed through the first quarter of a century of growth.

It is with gratification that we may record, upon the eve of the twenty-fifth anniversary of the opening of the Royal Ontario Museum of Palaeontology, a few of the achievements of this comparatively young Institution, which, in spite of its short period of growth, ranks among the foremost Museums of its kind in the world.

In building up a museum it is apparently important to acquire, in the first instance, a well-balanced assemblage of specimens representing the whole field of study and then, later, to concentrate on certain particular aspects of the subject. Owing to the unusual foresight of the original director this principle was established and carried out with precision. In consequence, we have a Museum of Palaeontology with a collection of fossil plants fairly characteristic of the ages; we have an exceptionally fine collection of invertebrate fossils representing the whole range of primitive organisms that flourished through geological time; we have represented, to a greater or less degree, all classes of vertebrate fossils; and finally, we have the second best collection of dinosaurs in the world. Among this large and varied collection of fossil remains we have over nine hundred type specimens—specimens that are unique and incapable of duplication.

This much prized and exceedingly valuable collection will be an everlasting memorial to Dr. Parks, the first and only Director of the Museum of Palaeontology up to the present time. With Dr. Parks's much regretted death on October 3, 1936, must be recorded the passing of one who spent his life in the interests of palaeontology in the Province of Ontario.

Owing to the rapid growth of the Museum and to the consequent increase in activities, the Board of Trustees in due time considered it advisable to subdivide the work in palaeontology. In July, 1937, therefore, the writer, who had been associated with the Museum since 1921 and who had been a member of the staff since 1927, was appointed Assistant Director of Invertebrate Palaeontology. At the same time Dr. Loris S. Russell, formerly of the staff of the Geological Survey of Canada, was appointed Assistant Director of Vertebrate Palaeontology.

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